

From Click to Doorstep: Lessons from Studies of Online Tobacco and Hemp-Derived Cannabis Retailers in California For Health Professionals Nationwide

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What if we could develop a system to routinely and systematically assess the marketing practices of online tobacco retailers?

A Need for E-commerce Compliance Assessments



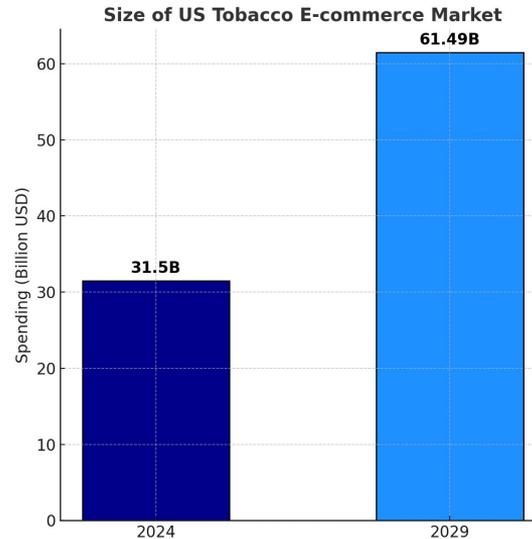
At Stanford during most of my postdoc I was a part of Dr. Lisa Henriksen's lab which studies policy compliance among tobacco retailers primarily in California



Dr. Lisa
Henriksen



While it has addressed many issues, a challenge I saw in Lisa's system was that it only looks in brick-and-mortar retailers and not online. This is an issue because tobacco e-commerce is booming



Source: Statista B2C eCommerce Market Report

Online shopping also is not addressed in some public health regulations, like the first version of California's flavored tobacco restriction (SB-793)

(b) (1) A tobacco retailer, or any of the tobacco retailer's agents or employees, shall not sell, offer for sale, or possess with the intent to sell or offer for sale, a flavored tobacco product or a tobacco product flavor enhancer.

(16) "Tobacco retailer" means a person who engages in this state in the sale of tobacco products directly to the public from a retail location. "Tobacco retailer" includes a person who operates vending machines from which tobacco products are sold in this state.

(11) "Retail location" means both of the following:

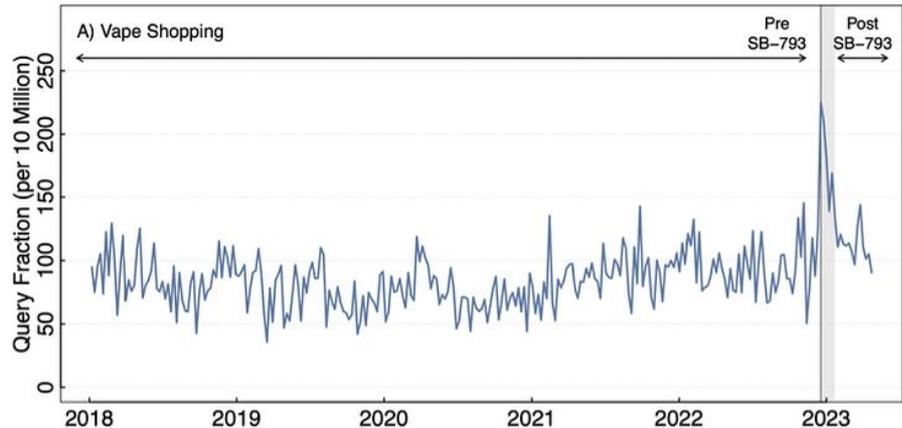
(A) A building from which tobacco products are sold at retail.

(B) A vending machine.

Does this cover online sales? Doesn't seem like it to me.

Online Shopping for Tobacco Products Rose with California's Flavor Restriction SB-793

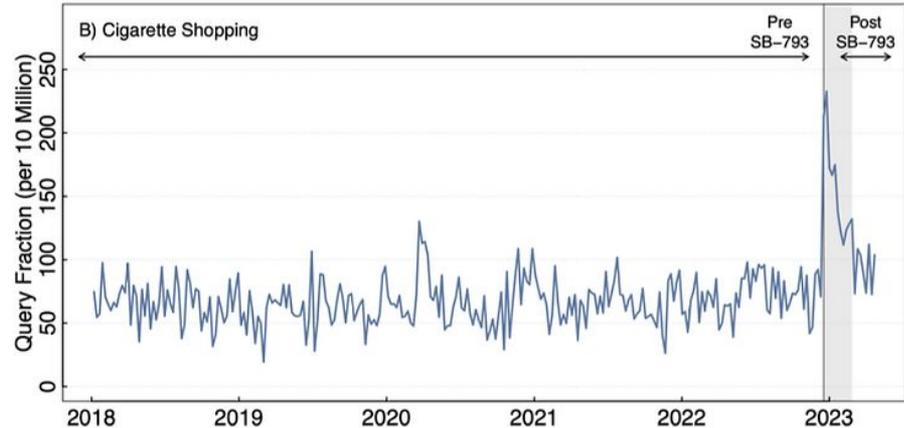
Weekly trend in Google searches for terms like “where can I order vapes online”



Leas EC, Mejorado T, Harati R, Ellis S, Satybaldiyeva N, Morales N, Poliak A, E-commerce licensing loopholes: a case study of online shopping for tobacco products following a statewide sales restriction on flavoured tobacco in California *Tobacco Control* Published Online First: 07 November 2023. doi: 10.1136/tc-2023-058269

Online Shopping for Tobacco Products Rose with California's Flavor Restriction SB-793

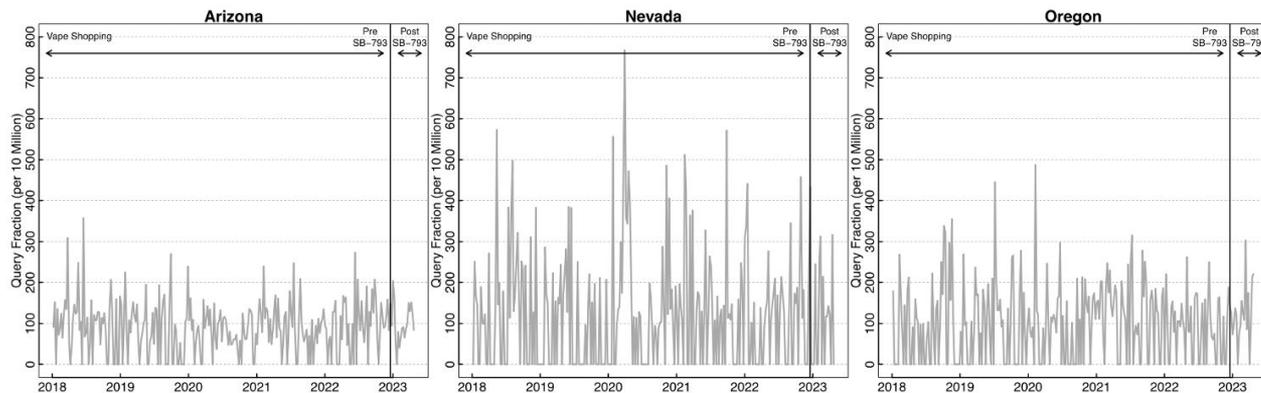
Weekly trend in Google searches for terms like “where can I order cigarettes online”



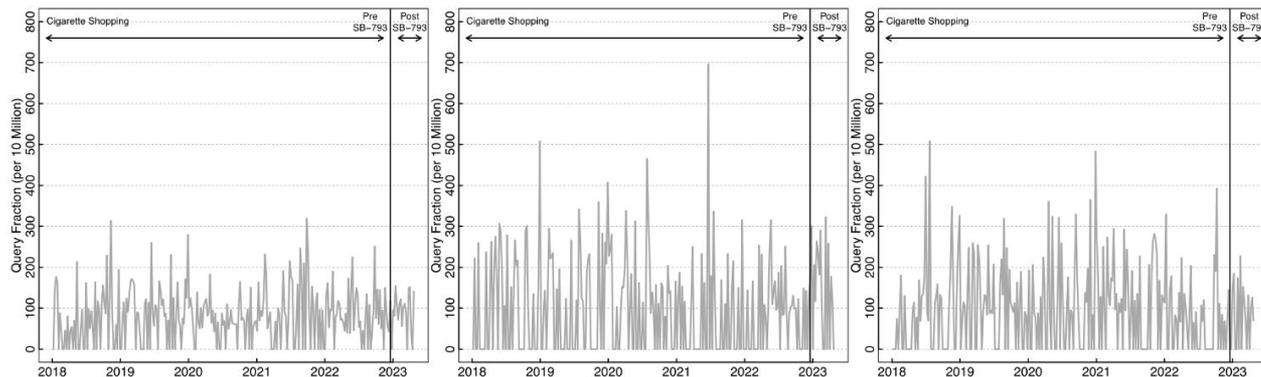
Leas EC, Mejorado T, Harati R, Ellis S, Satybaldiyeva N, Morales N, Poliak A, E-commerce licensing loopholes: a case study of online shopping for tobacco products following a statewide sales restriction on flavoured tobacco in California *Tobacco Control* Published Online First: 07 November 2023. doi: 10.1136/tc-2023-058269

The same searches did not increase in adjacent states

Vapes



Cigarettes



Leas EC, Mejorado T, Harati R, *et al* E-commerce licensing loopholes: a case study of online shopping for tobacco products following a statewide sales restriction on flavoured tobacco in California *Tobacco Control*. E-commerce Lab
Published Online First: 07 November 2023. doi: 10.1136/tc-2023-058269

Google searches provided easy access to websites Californian consumers could use to order products

Google search results for "order vapes online". The search bar shows "order vapes online" with a search icon. Below the search bar are filters: Shopping, Near me, Free shipping, Usa, No ID, Disposable, Images, Reddit, Fume. The results show "About 207,000,000 results (0.41 seconds)".

- Element Vape**
https://www.elementvape.com
Element Vape - Online Vape Shop - Vape Mods, Kits & E-Liquid
Shop incredible deals at Element Vape, a progressive online retail establishment serving the vaping community with mod kits, pod systems, ...
[Starter Kits](#) [Devices](#) [E-Liquids](#) [Box Mods](#)
- Mi-Pod**
https://mipod.com › collections › disposable-vape
Shop Disposable Vapes Online
Shop our great selection of disposables vapes online today. Our online vape store ... Free Shipping on Orders over \$79.99! VAPE KITSVAPE KITS. Shop by Style.
[BC5000 Sampler Pack](#) [Lost Mary OSS5000 Sampler](#) [Draco Sampler Pack](#)
- VaporFi**
https://www.vaporfi.com
VaporFi | Online Vape Shop - Vapes, E Juice, Mods, & More
Explore the assortment of the best vapes, e-liquids, mods, and more that the VaporFi online store has to offer. Shop great deals including free shipping ...

- Juicefly**
https://juicefly.com › Collections › Vape
Vape Delivery: Order Vapes Online
Explore Juicefly, one of the best vapes stores near you. Get Vape Delivery in Los Angeles & Shipping US. Buy vapes online today!
[Flum Pebble Vapes 6000 Puffs](#) [Vape](#) [California Honey 7000 Puffs 5...](#) [Deliver](#)


Leas EC, Mejorado T, Harati R, *et al* E-commerce licensing loopholes: a case study of online shopping for tobacco products following a statewide sales restriction on flavoured tobacco in California *Tobacco Control* Published Online First: 07 November 2023. doi: 10.1136/tc-2023-058269



A state law implemented January 1, 2025 addressed online sales and cited this work as a need for the law so studying the market can help improve regulation

SB-1230 Strengthen Tobacco Oversight Programs (STOP) and Seize Illegal Tobacco Products Act.

Among other things, it expands SB-793 to cover online sales.

“Even after California’s ban on the sale of flavored tobacco products took effect, researchers at the University of California, San Diego found that online shopping for flavored tobacco products increased significantly in the weeks after the implementation of Senate Bill 793.”

So, learning from the marketplace can help inform regulation

In addition to state laws, local licensing and flavor laws can also address online sales

San Diego County's laws are strong on online sales:

- “All sales of tobacco products **MUST** be conducted *in-person* (no delivery or online sales) at the licensed location.”
- Covers unincorporated areas of the County
- But it's unclear what compliance is like because there is no system for monitoring compliance.



LIVE WELL
SAN DIEGO

A federal law, the PACT Act also governs online sales

The PACT Act – Sets requirements for delivery sellers including:

- Registering with the ATF and state tax authorities
- Maintaining monthly sales/tax reports
- Not using USPS as a shipment method
- Requires delivery sellers abide by local laws such as flavor restrictions, excise taxes, or licensing requirements



State & local injunctions – The PACT Act lets state Attorneys General (and even cities or tribes) sue violators of PACT Act in federal court for injunctive relief and civil penalties

So, discovering PACT Act violators could provide agencies with data to conduct their own investigations and subsequently warn or litigate retailers

Two topics I want to cover today

1. I want to explain the approach we take to assess compliance of delivery sales of nicotine products among online retailers and what we can learn by doing this
2. I want to discuss another type of product that online tobacco retailers call delta-8-THC



Topic 1: Developing a Compliance Assessment System for Online Sales



Funding

- I will cover our pilot project from TRDRP that concluded in December 2024 (T32IP4864).
- We were also granted a full research award from TRDRP that started in July 2024 (T34IR7999) that I'll briefly touch on as well.

Study Goals and Scope

- Our goal is to study tobacco e-commerce retailer marketing practices using search engines.
- The focus on search engines helps identify retailers that consumers in specific jurisdictions are likely to come in contact with.
- We focused on vaping retailers given indications that these are the most prevalent form of tobacco e-commerce.

Our main setting was San Diego County where there are several local Flavor Bans we can assess compliance to in addition to the state flavor restriction SB-793

- Chula Vista (2023)
- City of San Diego (2023)
- Encinitas (2021)
- Imperial Beach (2020)
- Solana Beach (2020)
- Unincorporated areas (2020)
 - Also restricts e-commerce entirely

Our approach has 3 main parts

Aim 1: Obtain Lists of Retailers

Sample a list of retailers from internet search engines that are associated with particular geographies

Aim 2: Content Analysis

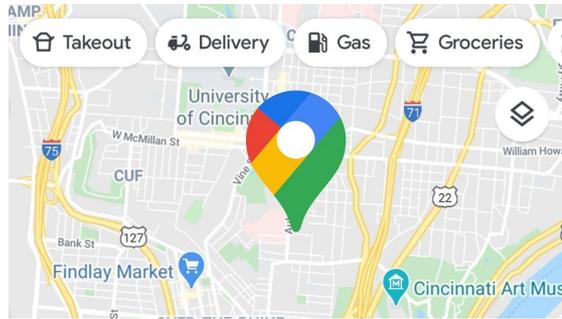
Inspect websites for policy compliance issues (e.g., do they sell flavored tobacco?)

Aim 3: Make Purchase Attempts

Confirm compliance issues by purchasing products and having them sent to households

Aim 1: We collected retailers in 2 ways

Map-based search



All retailers with physical store and website

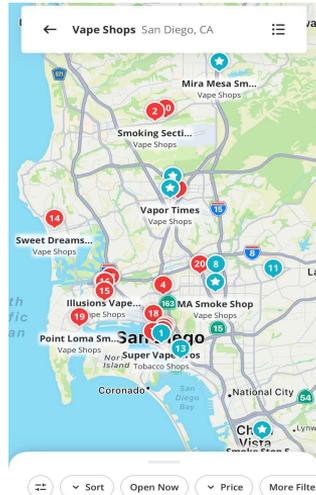
Search engine ranking



Top 20 websites in zip code

Aim 1 in action: Map-based data collection allows us to search for unlicensed retailers

E.g., Are the Yelp retailer on the licensing list in the area?



California Cigarette & Tobacco Products Licensees

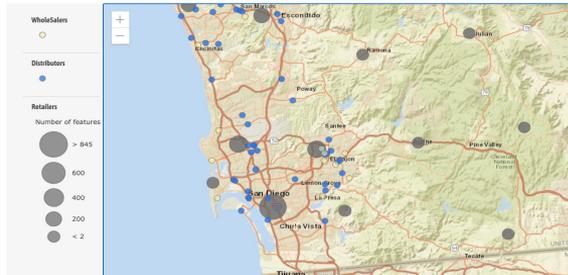
This map shows the location of all California licensed cigarette and tobacco product wholesalers, distributors, and retailers registered with the California Department of Tax and Fee Administration (CDTFA). Due to taxpayer confidentiality laws, no other licensee information may be released to the public. The map will be updated on a monthly basis.

The data is also available in the following formats: Wholesalers [Excel](#), Distributors [Excel](#), and Retailers [Excel](#).

If you have additional questions, visit our [Tax Guide for Cigarette and Tobacco Products](#) or contact the CDTFA at 1-800-400-7115 and select the "Special Taxes and Fees" option.

To report suspected tobacco tax evasion, contact the CDTFA Investigations Bureau at 1-916-324-0105 or the Tax Evasion Hotline at 1-888-334-3300. You may also submit a [complaint online](#).

This map uses clustering for retailers. Zoom in to the map to see individual licenses. Click on a location to get more information on cigarette and tobacco products licensees.

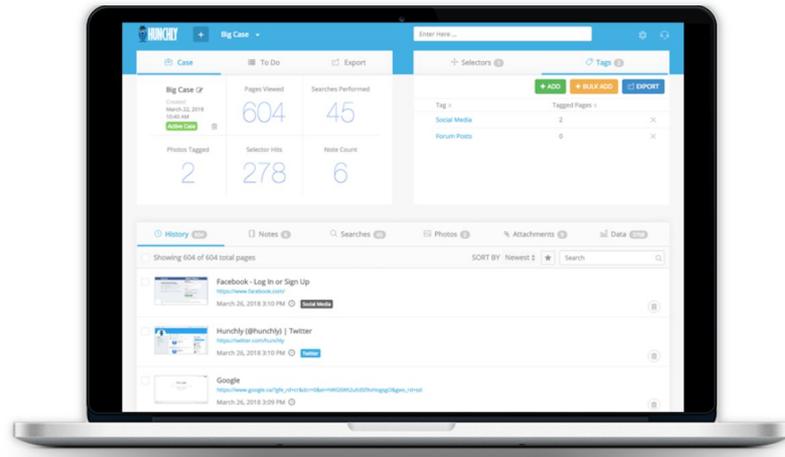


Aim 2: Conduct e-commerce content analysis

We review websites to determine things like:

- Whether they would ship to California
- What shipping methods they used
- Whether they sold...
 - Flavored nicotine vaping products
 - Other flavored tobacco products (e.g., cigarettes, cigars, etc.)
 - Psychoactive hemp products (e.g., delta-8-THC)

Aim 2 in action: Because sites change over time, we archived our content analysis using Hunchly which takes automated screenshots during a website visit



Aim 2: SemRush

We obtained a report from SemRush on the websites we reviewed from March to August of 2023

This included metrics such as:

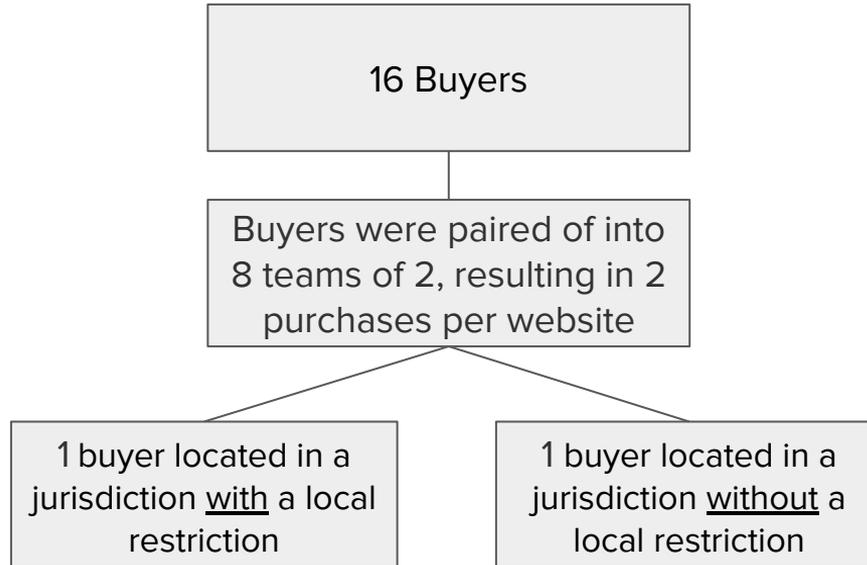
- Website traffic
- Google pagerank
- Buying Google ads



Aim 2: We subscribed to newsletters and followed social media handles to store direct-to-consumer marketing



Aim 3: 16 buyers were recruited to purchase products



Buyers were given e-gift cards and a list of products to buy and held on to them until study staff collected them



Buyer Order List

File Edit View Insert Format Data Tools Extensions Help

75% | \$ % .0_ .00 123 | Default... | - 10 +

	A	B	C	D
H3	(master_ID)	Product 1 Link	Product 2 Link (This item is 2nd priority, only purchase this if product 1 is unavailable)	Notes about this specific website
1				
2	1020	https://dragonvape.ca/products/allc-ult-ra-melon-ice-17_pos=2&fid=a066a5260&ss=c	https://dragonvape.ca/products/vuse-go-disposable-vape-grape-ice7_pos=8&fid=a066a5260&ss=c	
3	1027	https://www.ecigmafia.com/apihaa-x-oxbar-g8000-disposable-8000puffs/	https://www.ecigmafia.com/oxbar-g8000-disposable-8000puffs/	For this website you must manually select the flavor. Any in stock flavor that clearly sounds fruity or dessert of food like will work.

The image shows a Google Sheet titled 'Buyer Order List'. It contains a table with columns for master ID, Product 1 Link, Product 2 Link, and Notes. The table lists three products with their respective links and notes.



Aim 3: Buyers purchased and received products which allowed us to collect key indicators

For example, indicators like...

- Did the delivery person scan your ID?
- What delivery method was used? (Available from the shipping label)
- Where was the retailer located? (Available from the return address)



Results & Impacts



Descriptive Findings – Brick and Click Retailers

Google Maps and Yelp returned 311 vape shops, 37 had an e-commerce website

- 20 sold flavored tobacco through their website
- 5 were in a part of the county that restricted internet sales

We also found retailers trying to decouple the online shop from the shopfront to avoid flavor restrictions. For example...

- 1 online shop was on Tribal Land in San Diego
- 1 online shop was based in Yuma, Arizona, roughly 3 hours East of San Diego City

Descriptive Findings – Click-only Retailers

Google searches initially yielded **40,894** search results of which **470** were unique URLs and **83** were determined to be e-commerce retailers who might ship to San Diego

Among these, **68%** of websites offered flavored tobacco products

Descriptive Findings – Web Traffic

Over the 5 month period that we conducted content analysis (March 2023 through August 2023), there were **28.2 million** visits to the 78 websites that we audited.

The average number of visits per month was higher for click-only retailers

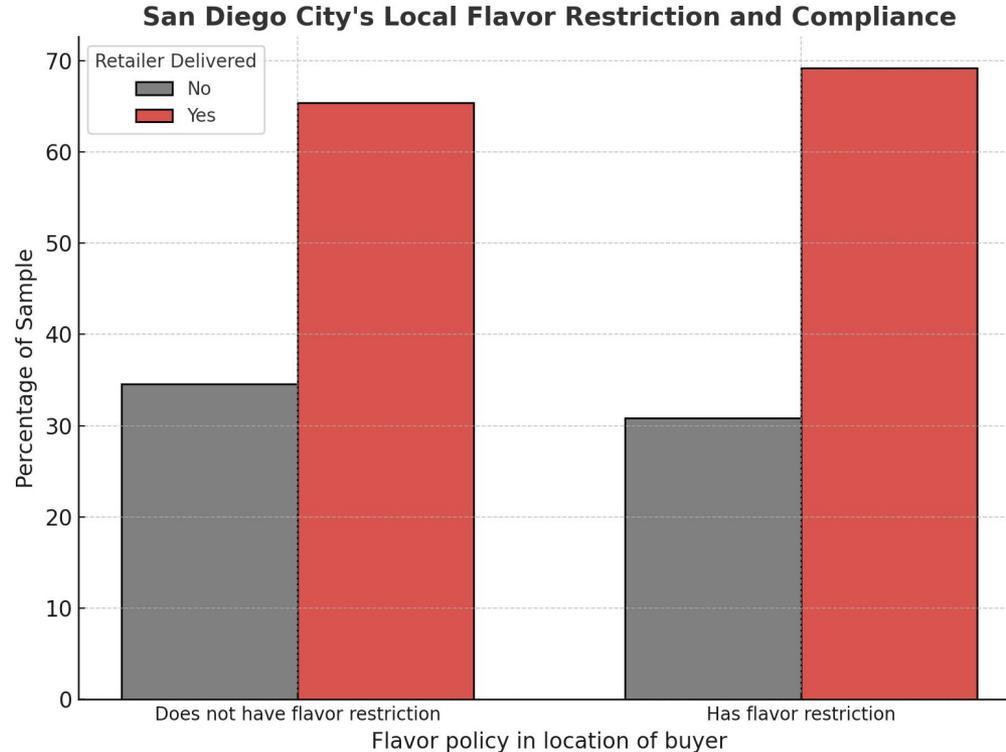
Click-only = **~55K visits per month**

Brick-and-click = **~2K visits per month**

There was a clear outlier with one retailer averaging **3.3 million** monthly visits

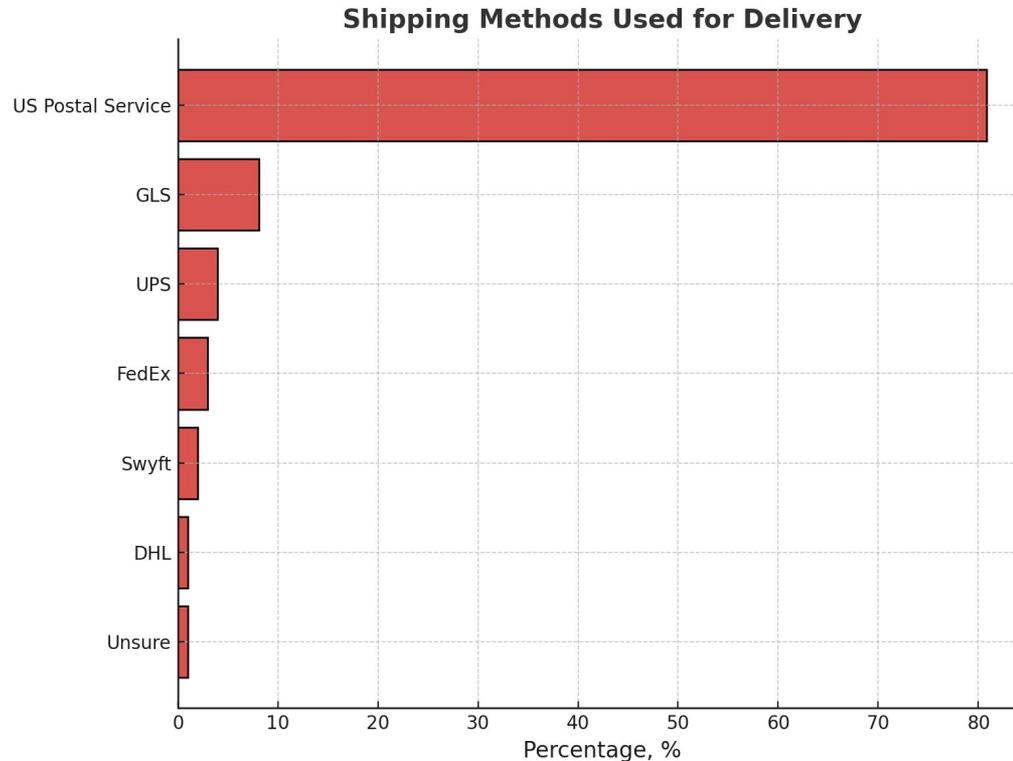
Although the average was low for brick-and-click retailers, one website averaged **45K** monthly visits.

We found that San Diego City's local flavor laws have no impacts on likelihood of delivery of flavored products



Harati RM, Ellis SE, Satybaldiyeva N, et al. Online Retailer Nonadherence to Age Verification, Shipping, and Flavor Restrictions on E-Cigarettes. *JAMA*. Published online November 11, 2024. doi:10.1001/jama.2024.21597

Nearly all successful purchases violated a Federal law called the PACT Act by ... using USPS

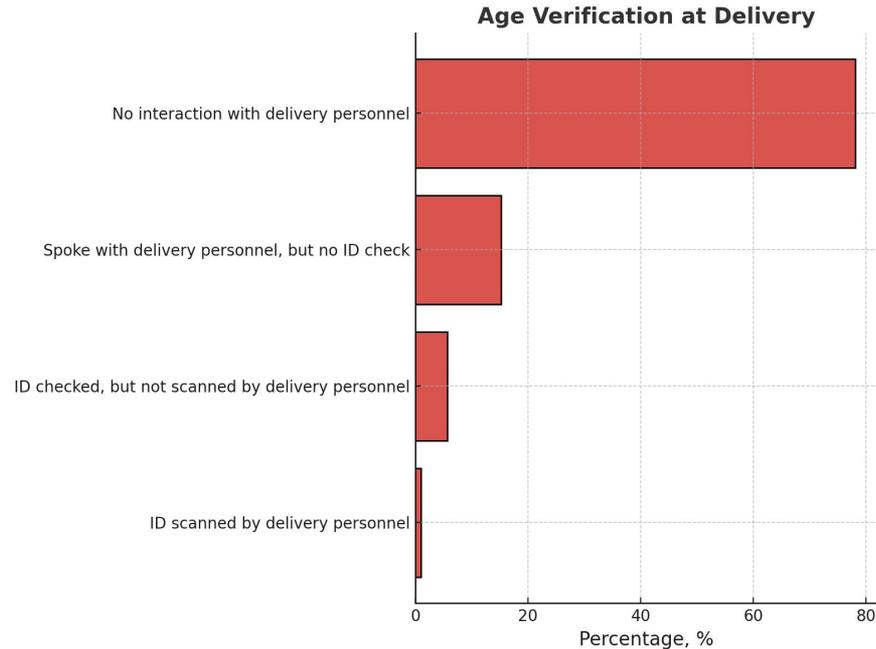


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Online Retailer Nonadherence to Age
Verification, Shipping, and Flavor Restrictions
on E-Cigarettes. *JAMA*. Published online
November 11, 2024.
doi:10.1001/jama.2024.21597

Nearly all successful purchases violated a Federal law call the PACT Act by ... not doing ID scans



Harati RM, Ellis SE, Satybaldiyeva N, et al.
Online Retailer Nonadherence to Age
Verification, Shipping, and Flavor Restrictions
on E-Cigarettes. *JAMA*. Published online
November 11, 2024.
doi:10.1001/jama.2024.21597



We also looked for tax compliance because it seems like most retailers are not paying taxes, but are required to pay California E-cigarette Excise Tax (CECET) of 12.5% on all purchases

Invoice

Order No. 69653
Order Date October 14, 2023
Shipping Method USPS Priority Mail

get pop

Ship to [REDACTED] Bill to [REDACTED]
9168 REGENTS RD 9168 Regents Road
APT D Apt D
LA JOLLA, CA 92037-1447 La Jolla, CA 92037
US US

Item Description	Qty	Price	Item Total
puff-plus-atoe-grape Puff Plus: Aloe Grape	x1	7.99	7.99
Hi-chew-1 Hi Chew	x2	0.00	0.00
			7.99
			Subtotal 12.99
			Shipping 0.00
			Discount 0.00
			Tax 0.00
			Total 20.98

Notes
ADD 2 PIECES OF HI-CHEW CANDY - auto rule

69653
Thanks for your business
GetPop, Inc.
66 West Flagler St, Suite 900 / Miami, FL 33130 / US
support@getpop.com
Page 1 of 1



Mejorado T, Ellis S, Harati RM, Satybaldiyeva N, Benitez G, Austin EAC, Leas EC. Online retailer noncompliance to e-cigarette excise tax and tobacco licensing laws. Tobacco Control. 2024 ePub ahead of print

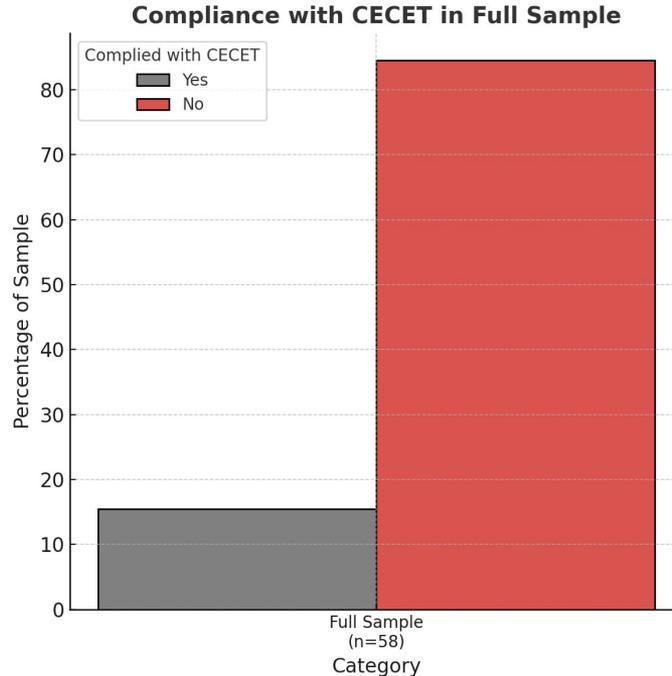


Nearly all retailers (85.4%) did not appropriately pay the CA state excise tax called CECET



Mejorado T, Ellis S, Harati RM, Satybaldiyeva N, Benitez G, Austin EAC, Leas EC. Online retailer noncompliance to e-cigarette excise tax and tobacco licensing laws. Tobacco Control. 2024 ePub ahead of print

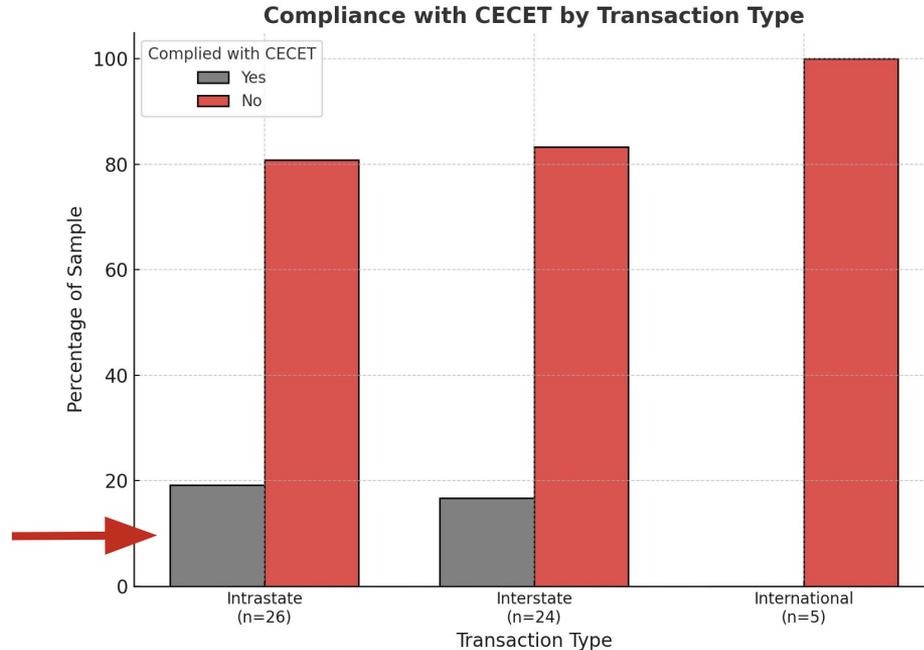
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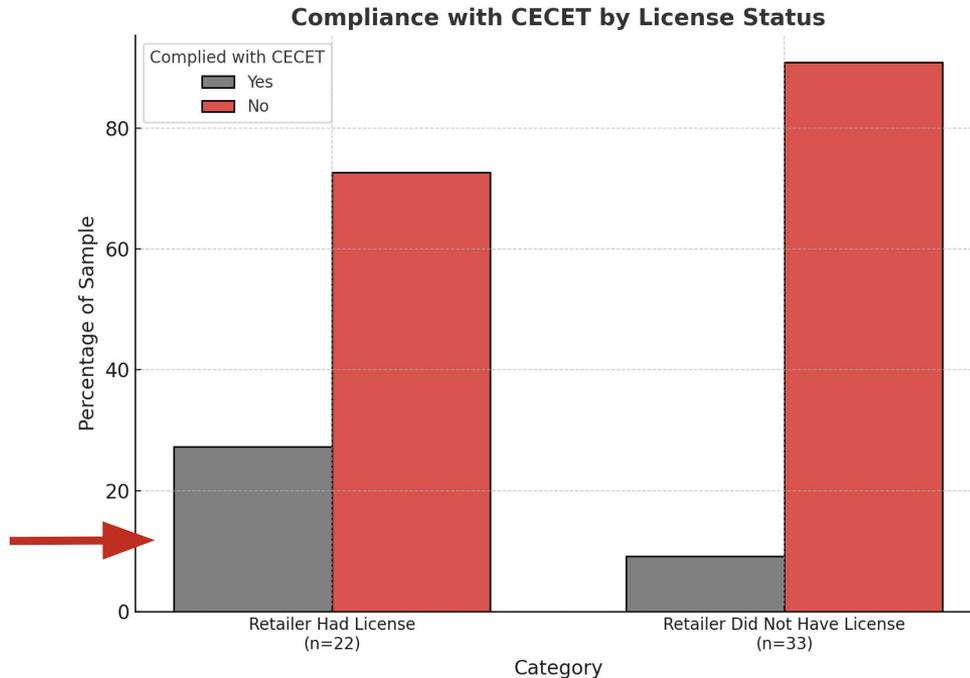
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Compliance was only slightly higher among intrastate transactions



Mejorado T, Ellis S, Harati RM, Satybaldiyeva N, Benitez G, Austin EAC, Leas EC. Online retailer noncompliance to e-cigarette excise tax and tobacco licensing laws. Tobacco Control. 2024 ePub ahead of print

And compliance was still low among licensed retailers



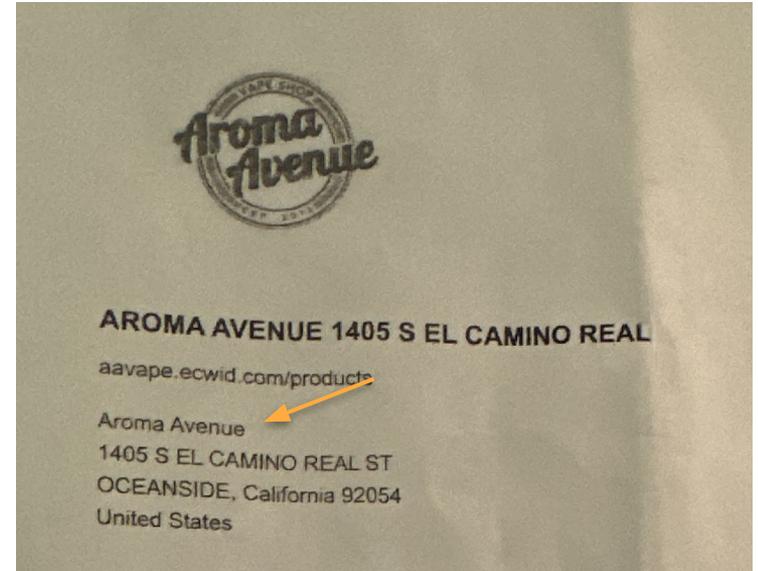
Mejorado T, Ellis S, Harati RM, Satybaldiyeva N, Benitez G, Austin EAC, Leas EC. Online retailer noncompliance to e-cigarette excise tax and tobacco licensing laws. Tobacco Control. 2024 ePub ahead of print

We are also looking closer at the exterior of the package, because many retailers try to obfuscate the true contents, which is also a PACT Act violation

External Shipping Label



Internal Packaging Slip



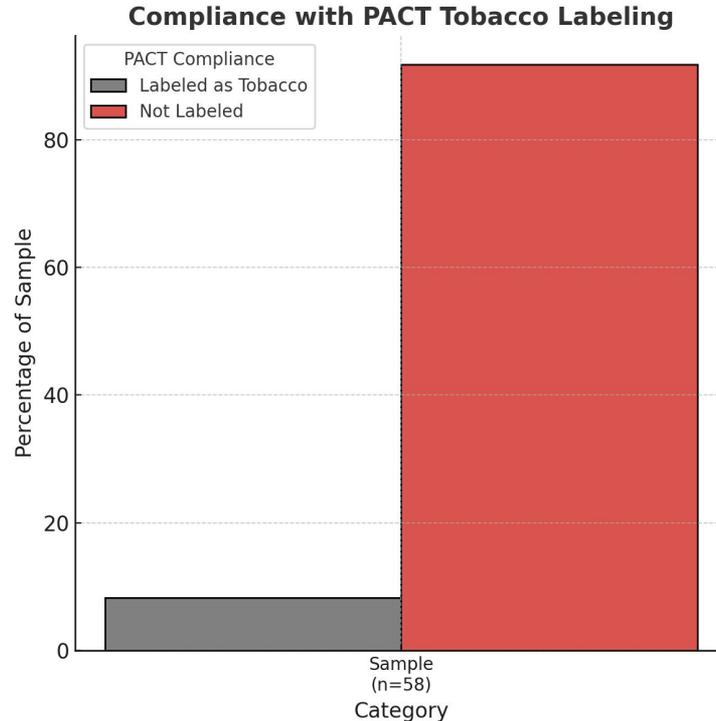
Austin EAC, Ellis SE, Berghammer L, Rice NM, Appolon G, Leas EC. Online Vaping Retailers Conceal Tobacco Contents in Shipped Packages, 2025. Poster presented at the Society For Research on Nicotine and Tobacco Annual Meeting in New Orleans, LA.

Only 8.2% of retailers correctly label packages with “tobacco” in compliance with PACT



Austin EAC, Ellis SE, Berghammer L, Rice NM, Appolon G, Leas EC. Online Vaping Retailers Conceal Tobacco Contents in Shipped Packages, 2025. Poster presented at the Society For Research on Nicotine and Tobacco Annual Meeting in New Orleans, LA.

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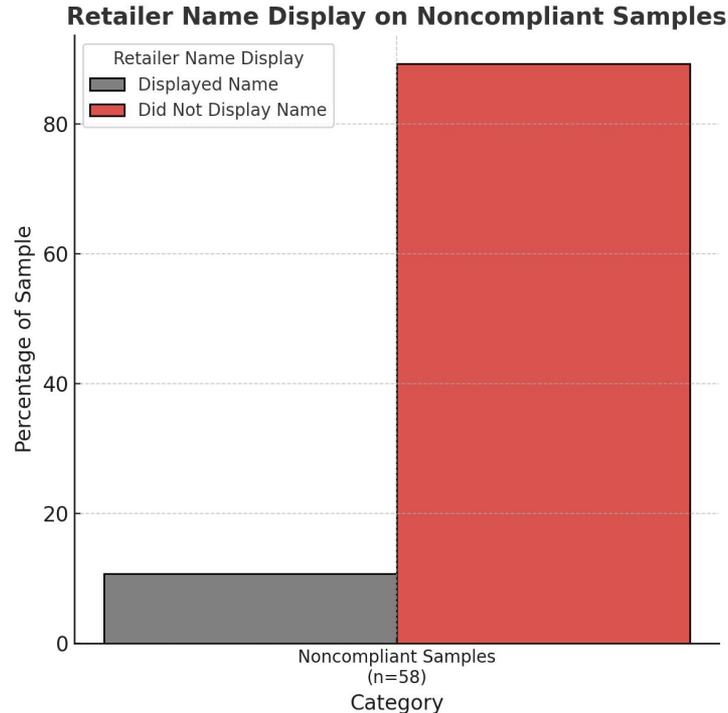
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Of those noncompliant, only 10.7% displayed the retailer's actual business name



Austin EAC, Ellis SE, Berghammer L, Rice NM, Appolon G, Leas EC. Online Vaping Retailers Conceal Tobacco Contents in Shipped Packages, 2025. Poster presented at the Society For Research on Nicotine and Tobacco Annual Meeting in New Orleans, LA.

Dr. Eric Leas



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Key Takeaway

The online market for nicotine products faces many challenges with enforcement, but surveying this market can pinpoint areas that regulators can use to guide their enforcement activities and understand new safety concerns.

In California, agencies are wanting to get a handle on this. Here are a few examples of agencies we had data requests from:

- California Tax and Fee Administration
- California Department of Justice
- National Association of Attorneys General
- City attorneys
 - LA City
 - San Diego City
- Departments of Public Health
 - California Department of Public Health
 - San Diego County Department of Public Health
- Sheriff's Department
 - San Diego Sheriff's Department
- Researchers
 - E.g., Truth Initiative

Topic 2: Studies of Delta-8-THC, another Product Online Tobacco Retailers Sell

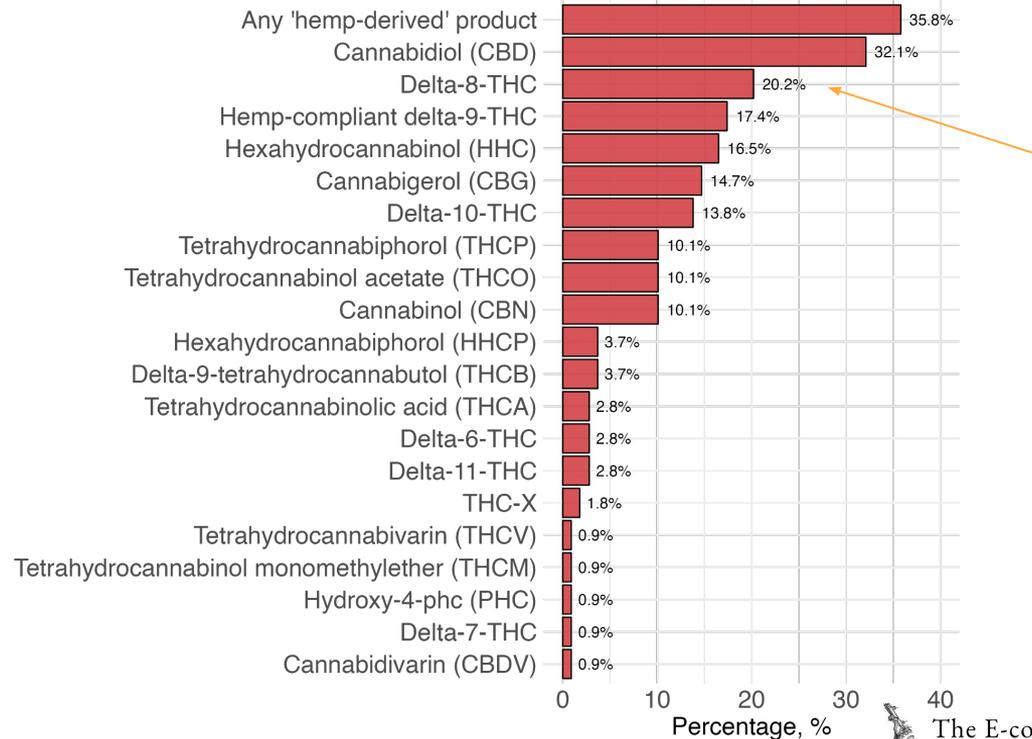


Many retailers that sell nicotine are selling “hemp-derived” cannabis and one of particular interest delta-8-THC

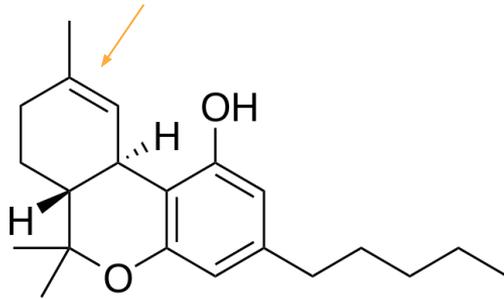


Satybaldiyeva N, Harati R, Mejorado T, Morales N, Benitez G, Ellis SE, Ferran K, Leas EC. Derived cannabinoid product availability among online vape shops. *Prev Med Rep.* 2024 Oct 22;48:102910. doi: 10.1016/j.pmedr.2024.102910. PMID: 39526213; PMCID: PMC11541839.

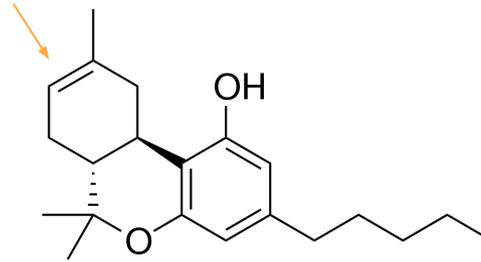
Availability of Various Hemp-Derived Products



Delta-8-THC is what is called a “structural analog” of delta-9-THC, which is the main psychoactive chemical that naturally occurs in Cannabis



Delta-9-THC



Delta-8-THC

The only difference is in one carbon position

Delta-8-THC and delta-9-THC are also “functional analogs” in that they are both CB1 receptor partial agonists (i.e., they produce a “cannabis high”), but delta-8-THC has a weaker binding site affinity leading to a reduced potency at the same dose



REVIEW ARTICLE | [Open Access](#) |

Review of delta-8-tetrahydrocannabinol (Δ^8 -THC): Comparative pharmacology with Δ^9 -THC

[Correction\(s\) for this article](#)

Michael Tagen Linda E. Klumpers

First published: 06 May 2022 | <https://doi.org/10.1111/bph.15865> | Citations: 23

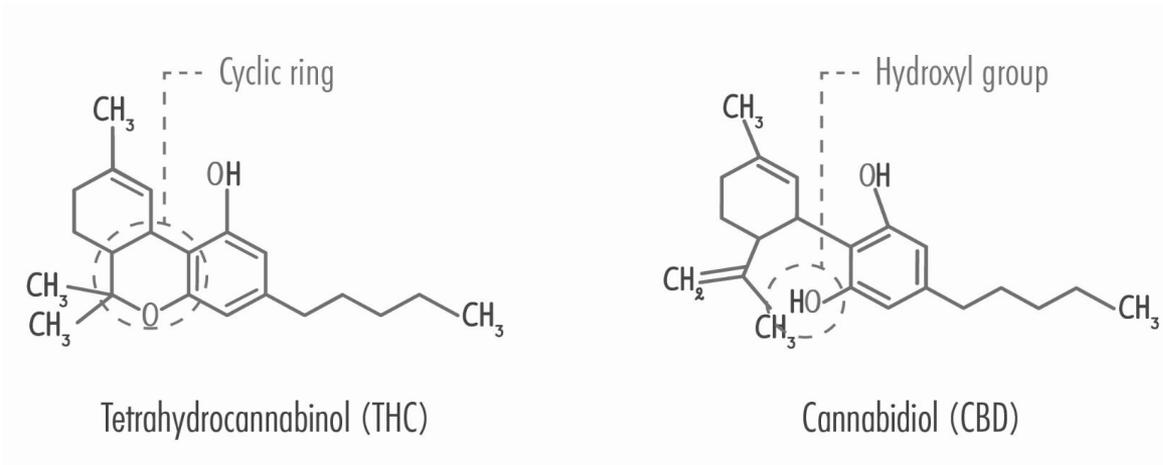
[Correction added on 16 June 2022, after first online publication: Linda Klumpers' ORCID ID has added in this version.]



But delta-8-THC products are usually at higher doses to compensate for reduced potency

Standard dose in gummy	mg
Delta-8-THC	25
Delta-9-THC	5-10

Delta-8-THC is not abundant in cannabis but it can be made through a conversion relatively easily with exposure to hydrochloric acid or another acid-based solution to CBD



CBD has a similar structure to THC, making conversion from CBD to THC simple

Delta-8-THC remained an esoteric compound until the passage of the “2018 Farm Bill”

- The Farm Bill is a Congressionally approved bill that is updated about every 4-6 years that sets standards for agricultural manufacturing practices
- Among many topics, the 2018 Farm Bill separated the term “hemp” from the definition of “marijuana” in the US Controlled Substance Act.
- It defined hemp as: “the plant *Cannabis sativa* L. and any part of that plant, including the seeds thereof and all derivatives, extracts, cannabinoids, isomers, acids, salts, and salts of isomers, whether growing or not, with a **delta-9 tetrahydrocannabinol** concentration of **not more than 0.3 percent** on a dry weight basis.”



Mitch McConnell was
the bill author

This change was intended to allow for industrial uses of hemp to not violate federal law



But because delta-8-THC is not delta-9-THC, manufacturers like **Indiana-based 3Chi** have argued that it is “Federally legal” – it’s hemp

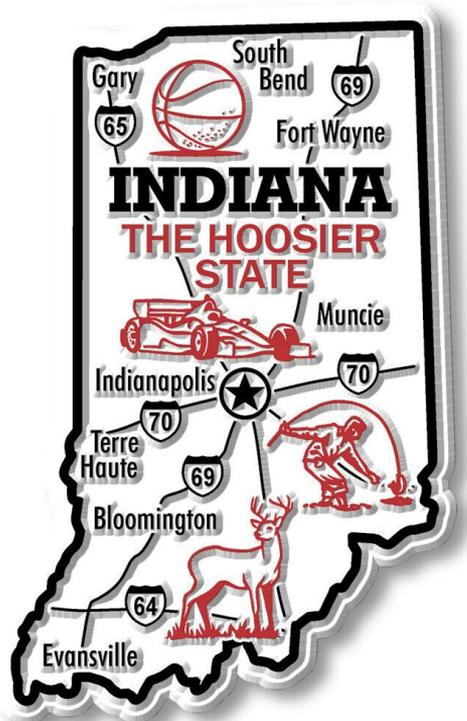


Is Delta 8 THC legal federally?

YES

Read our full legal disclaimer [HERE](#).

This interpretation allows 3Chi to produce cannabis products in a state with one of the nation's most restrictive laws on marijuana



Where possession of even a single joint of cannabis is punishable by up to a year of incarceration and a fine of up to \$5,000

Business appears to be booming for 3Chi

They even have a NASCAR Partnership



In addition to NASCAR, 3Chi uses national marketing channels that are not available to brands in state recreational systems

3Chi is a primary sponsor of Barstool Sports.
A national media company valued at \$8B



They also use shipping methods that are not available to brands in state-run recreational systems to ship around the country

SHOP ▾ WHOLESALE TESTING ▾ INFO ▾



Q LOGIN

CART / \$0.00



Available Shipping Methods

USPS First Class Mail – Transit times can vary between orders. Please allow up to 14 business days.

UPS Shipping – Orders are currently arriving between 5 to 7 business days once in the hands of UPS but can run longer.

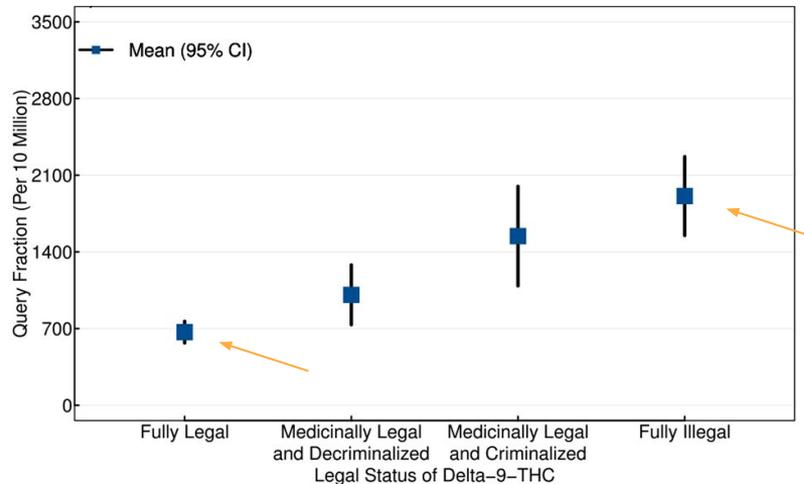


Results & Impacts



What we've found in our research is that delta-8-THC may be serving as a substitute for cannabis

Google searches for delta-8-THC are highest where marijuana use is illegal



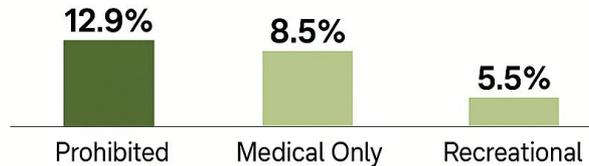
Leas EC, Nobles AL, Shi Y, Hendrickson E. Public interest in Δ 8-Tetrahydrocannabinol (delta-8-THC) increased in US states that restricted Δ 9-Tetrahydrocannabinol (delta-9-THC) use. *Int J Drug Policy*. 2022 Mar;101:103557. doi: 10.1016/j.drugpo.2021.103557. Epub 2021 Dec 21. PMID: 34952279; PMCID: PMC9126323.
Dr. Eric Leas



By 2023, we estimated that ~7.7% of U.S. adults had tried delta-8-THC with use being more common in places that restricted marijuana use

That's about 19.3 million people

USE DIFFERS BY STATE MARIJUANA LAWS



Percentage of adults who have delta-8-THC by states with the specified



Satybaldiyeva N, Yang K, Kepner W, Leas EC. U.S. State Marijuana and Delta-8-Tetrahydrocannabinol Laws and Delta-8-Tetrahydrocannabinol Use, AJPM, 2025, Volume 0, Issue 0, 108026

We've also found that adverse events related to delta-8-THC are very similar to those reported for acute cannabis intoxication

Table 2 Adverse events associated with delta-8-THC reported by delta-8-THC users on Reddit delta-8-THC forum r/Delta8 by MedDRA Preferred Term

MedDRA Preferred Terms	Subcategory Prevalence
Anxiety	16.4% (95% CI: 12.8–20.6)
Cough	15.5% (95% CI: 11.6–19.4)
Paranoia	9.3% (95% CI: 6.3–12.2)
Accidental overdose	8.7% (95% CI: 5.7–11.9)
Heart rate increased	6.9% (95% CI: 4.5–9.9)
Panic attack	6.9% (95% CI: 4.2–9.6)



I have argued that this marketplace was created by a loophole since about 2021 and it does not make common sense to treat delta-8-THC and other THC's as hemp and poses some public health risks



OPENING IDEAS & PRACTICE **AJPH**

The Hemp Loophole: A Need to Clarify the Legality of Delta-8-THC and Other Hemp-Derived Tetrahydrocannabinol Compounds

Eric C. Leas, PhD, MPH

ABOUT THE AUTHOR

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On June 22, 2021, Connecticut became the newest state to legalize recreational cannabis, raising the total number of US states allowing recreational cannabis to 18. One of the promissory notes of state-led legalization is that it will bring cannabis out of an illicit market and into a more transparent one with better safety standards. Meeting this challenge will require properly defining a group of compounds that fall into the category of tetrahydrocannabinol (THC) but can have different structures and names. Here I discuss

WHERE DO THC COMPOUNDS COME FROM?

The label THC refers to a group of compounds that in chemistry are called isomers. THC isomers have the same formula and structure but a different arrangement of atoms and potentially different pharmacological properties. The most abundant naturally occurring THC isomer is Δ^9 -tetrahydrocannabinol (Δ^9 -THC). Δ^9 -THC is the main cannabis-specific compound (called a cannabinoid) responsible for mediating

only by the location of a carbon-carbon double bond.¹ Because the structure of Δ^8 -THC is slightly different from that of Δ^9 -THC, it interacts with the human body in ways that can differ from Δ^9 -THC. For example, at the same dose, Δ^8 -THC produces a psychotropic effect that is similar to but slightly reduced from Δ^9 -THC. The pharmacological profile of Δ^8 -THC also suggests it has antiemetic, anxiolytic, appetite-stimulating, analgesic, and neuroprotective properties, indicating that it may have therapeutic applications and that some of these applications may differ from Δ^9 -THC.

Both Δ^8 -THC and Δ^9 -THC naturally occur in cannabis, but they can also be synthesized. One means of synthesis is conversion from another group of naturally occurring cannabis isomers called cannabinoids (CBD). Because CBD isomers are similar in structure to THC isomers, they can be converted to THC isomers through a relatively simple series of chemical reactions. The main method of converting CBD to Δ^8 -THC yields a solution containing Δ^8 -THC and Δ^9 -THC as well as other byproducts from the associated reactions. This solution can be further processed to remove Δ^9 -THC and then added to various consumer goods for consumption or inhalation.

11/18/21 11:51 AM EST 2021/06/22/2021

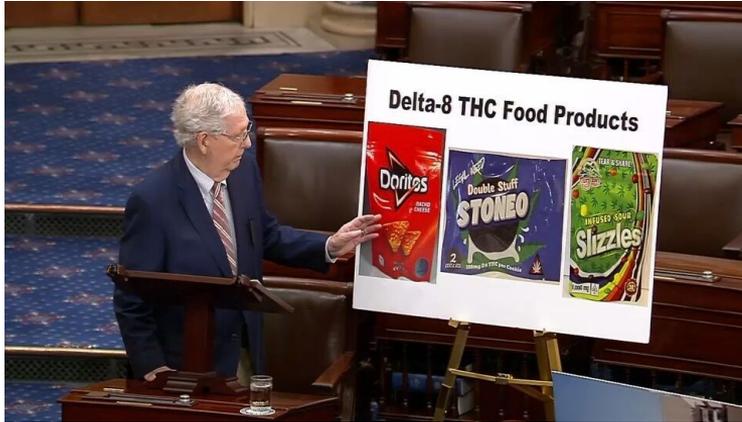
Leas EC. The Hemp Loophole: A Need to Clarify the Legality of Delta-8-THC and Other Hemp-Derived Tetrahydrocannabinol Compounds. Am J Public Health. 2021 Nov;111(11):1927-1931. doi: 10.2105/AJPH.2021.306499. Epub 2021 Oct 7. PMID: 34618542; PMCID: PMC8630489.



For example, one health risk is that a lack of packaging requirements have led to “kid friendly” packaging. Poison Control Centers have received thousands of calls of accidental ingestion among children.



In November 2025 this loophole was closed in a revision to the Farm Bill that will be implemented at the end of 2026. So, the market may change.



“I led the effort to legalize industrial hemp through the 2014 pilot program and the 2018 Farm Bill,” McConnell said. “Unfortunately, companies have exploited a loophole in the 2018 legislation by taking legal amounts of THC from hemp and turning it into intoxicating substances, and then marketing it to children in candy-like packaging and selling it in easily accessible places, like gas stations and convenience stores all across our country.”

Other substance are pushing limits of product regulation



For example, we've also found that many vaping retailers are selling products they call "psychedelic mushrooms" but aren't really



Leas EC, Satybaldiyeva N, Kepner W, Yang KH, Harati RM, Corroon J, Rouffet M. Need for a Public Health Response to the Unregulated Sales of Amanita muscaria Mushrooms. Am J Prev Med. 2024 Sep;67(3):458-463. doi: 10.1016/j.amepre.2024.05.006. Epub 2024 Jun 10. PMID: 38864780.

Many of these products contain a type of mushroom called *Amanita muscaria*

Details:

- These are psychotropic but in a different way than psilocybe mushrooms (i.e., “magic mushrooms”)
 - They contain a mushroom called muscimol that acts on GABA_A receptors (like alcohol and benzodiazepines)
- Multiple compounds in *A. muscaria* including muscimol are extremely toxic – kill mice at a lower dose than fentanyl
- Like delta-8-THC they are not explicitly included in Controlled Substance Laws so manufacturers claim they can sell products containing extracts legally



Leas EC, Satybaldiyeva N, Kepner W, Yang KH, Harati RM, Corroon J, Rouffet M. Need for a Public Health Response to the Unregulated Sales of Amanita muscaria Mushrooms. Am J Prev Med. 2024 Sep;67(3):458-463. doi: 10.1016/j.amepre.2024.05.006. Epub 2024 Jun 10. PMID: 38864780.

Because of potential health risks, in December 2024 the FDA banned *Amanita muscaria* and 3 active ingredients contained in it for use as food additives as they did not satisfy *GRAS* “Generally Recognized As Safe”



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HFP Constituent Updates

Constituent Update

December 18, 2024

Content current

as of:

12/18/2024



Summary

1. The online market for nicotine products faces many challenges with enforcement, but surveying this market can pinpoint areas that regulators can use to guide their enforcement activities and understand new safety concerns.
2. Online retailers of nicotine are not exclusively selling nicotine. They sell many other products like delta-8-THC and *Amanita muscaria* that are pushing the limits of our regulations on psychoactive substances and may be presenting health risks.

Thanks & Let's keep in touch!

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